

What is claimed is

1. A storage device controlling device comprising:

a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device;

a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and

a first memory for storing the data delivered between the channel controller and the disk controller, wherein the channel controller is equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, and wherein the second processor transmits information indicating the storage position of the data in the second memory to the first processor, the first processor writes into the third memory data transfer information containing information indicating the storage position of the data in the

first memory and information indicating the storage position of the data in the second memory, and the data transfer device reads out the data transfer information from the third memory and controls the data transfer between the first memory and the second memory on the basis of the data transfer information thus read out.

2. a storage device controlling device comprising:

a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device;

a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and

a first memory for storing the data delivered between the channel controller and the disk controller, wherein the channel controller is equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on

a circuit board, and wherein the second processor transmits information indicating the storage position of the data in the second memory to the first processor, the first processor writes into the third memory data transfer information containing information indicating the storage position of the data in the first memory and information indicating the storage position of the data in the second memory and transmits the storage position of the data transfer information in the third memory to the data transfer device, and the data transfer device reads out the data transfer information from the third memory and controls the data transfer between the first memory and the second memory on the basis of the data transfer information thus read out.

3. A storage device controlling device comprising:

a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device;

a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and

a first memory for storing the data delivered between the channel controller and the disk controller, wherein the channel controller is equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file

access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, and wherein the first processor writes into the third memory first data transfer information containing information indicating the storage position of the data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the data in the second memory, and the data transfer device reads out the second data transfer information from the second memory, reads out the first data transfer information from the third memory, and controls the data transfer between the first memory and the second memory on the basis of the first data transfer information and the second data transfer information.

4. A storage device controlling device comprising:

a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device;

a disk controller for carrying out input/output control

of data stored in a storage volume for storing the data; and

a first memory for storing the data delivered between the channel controller and the disk controller, wherein the channel controller is equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, and wherein the first processor writes into the third memory first data transfer information containing information indicating the storage position of the data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the data in the second memory, the second processor transmits information indicating the storage position of the second data transfer information to the first processor, the first processor transmits to the data transfer device transfer start information containing information indicating the storage position of the first data transfer information and information indicating the storage

position of the second data transfer information, and the data transfer device reads out the second data transfer information from the second memory on the basis of the transfer start information, reads out the first data transfer from the third memory on the basis of the transfer start information, and controls the data transfer between the first memory and the second memory on the basis of the first data transfer information and the second data transfer information.

5. The storage device controlling device according to any one of claims 1 to 4, wherein the data transfer device writes into the third memory information indicating the result of the data transfer carried out between the first memory and the second memory.

6. A storage device controlling device comprising:

a channel controller for receiving a data writing request based on a file-name indication and writing data from an information processing device through a network;

a disk controller for writing the writing data into a storage volume in which data are stored; and

a first memory for storing the writing data transmitted/received between the channel controller and the disk controller, wherein the channel controller contains a first processor for outputting a block-basis write request corresponding to the data writing request and controlling the first memory, a file access processor which has a second

processor and a second memory controlled by the second processor and serves to receive the data writing request and the writing data from the information processing device, a data transfer device for controlling the data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, and wherein the first processor writes into the third memory first data transfer information containing information indicating the storage position of the writing data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the writing data in the second memory and transmits information indicating the storage position of the second data transfer information to the first processor, the first processor transmits the data transfer device transfer start information containing information indicating the storage position of the first data transfer information and information indicating the storage position of the second data transfer information, the data transfer device reads out the second data transfer information from the second memory on the basis of the transfer start information, reads out the first data transfer information from the third memory on the basis of the transfer start information and transfers the writing data from the second memory to the first memory on the basis of the first data transfer information and the second data

transfer information, and the disk controller writes into the storage volume the writing data stored in the first memory on the basis of the write request.

7. A storage device controlling device comprising:

a channel controller for receiving a data read-out request based on a file-name indication from an information processing device through a network and transmitting to the information processing device read-out data read out from a storage volume for storing data;

a disk controller for reading out the read-out data from the storage volume; and a first memory for storing the read-out data transmitted/received for the storage volume between the channel controller and the disk controller, wherein the channel controller comprises a first processor for outputting a block-basis read request corresponding to the data read-out request and controlling the first memory, a file access processor which has a second processor and a second memory for controlling the second processor and receives the data read-out request from the information processing device, a data transfer device for controlling the data transfer between the first memory and the second memory, and a third memory controlled by the first memory, which are formed on a circuit board, and wherein the disk controller writes into the first memory the read-out data read out from the storage volume on the basis of the read request, the first processor writes into the third memory first data



transfer information containing information indicating the storage position of the read-out data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the read-out data in the second memory and transmits information indicating the storage position of the second data transfer information to the first processor, the first processor transmits to the data transfer device transfer start information containing information indicating the storage position of the first data transfer information and information indicating the storage position of the second data transfer information, the data transfer device reads out the second data transfer information from the second memory on the basis of the transfer start information, reads out the first data transfer information from the third memory on the basis of the transfer start information and transfers the read-out data from the first memory to the second memory on the basis of the first data transfer information and the second data transfer information, and the second processor transmits the read-out data stored in the second memory to the information processing device.

8. A control method for a storage device controlling device comprising: a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and

transmitting/receiving data to/from the information processing device; a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and a first memory for storing the data delivered between the channel controller and the disk controller, the channel controller being equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, characterized in that the second processor transmits information indicating the storage position of the data in the second memory to the first processor, the first processor writes into the third memory data transfer information containing information indicating the storage position of the data in the first memory and information indicating the storage position of the data in the second memory, and the data transfer device reads out the data transfer information from the third memory and controls the data transfer between the first memory and the second memory on the basis of the data transfer

information thus read out.

9. A control method for a storage device controlling device comprising: a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device; a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and a first memory for storing the data delivered between the channel controller and the disk controller, the channel controller being equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, characterized in that the second processor transmits information indicating the storage position of the data in the second memory to the first processor, the first processor writes into the third memory data transfer information containing information indicating the storage position of the

data in the first memory and information indicating the storage position of the data in the second memory and transmits the storage position of the data transfer information in the third memory to the data transfer device, and the data transfer device reads out the data transfer information from the third memory and controls the data transfer between the first memory and the second memory on the basis of the data transfer information thus read out.

10. A control method for a storage device controlling device comprising: a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device; a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and

a first memory for storing the data delivered between the channel controller and the disk controller, the channel controller being equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer

between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, characterized in that the first processor writes into the third memory first data transfer information containing information indicating the storage position of the data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the data in the second memory, and the data transfer device reads out the second data transfer information from the second memory, reads out the first data transfer information from the third memory, and controls the data transfer between the first memory and the second memory on the basis of the first data transfer information and the second data transfer information.

11. A control method for a storage device controlling device comprising: a channel controller for receiving a data input/output request based on file-name indication from an information processing device through a network and transmitting/receiving data to/from the information processing device; a disk controller for carrying out input/output control of data stored in a storage volume for storing the data; and

a first memory for storing the data delivered between the channel controller and the disk controller, the channel controller being equipped with a first processor for outputting a block-basis I/O request corresponding to the data input/output

request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request and the data which is carried out with the information processing device, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, characterized in that the first processor writes into the third memory first data transfer information containing information indicating the storage position of the data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the data in the second memory, the second processor transmits information indicating the storage position of the second data transfer information to the first processor, the first processor transmits to the data transfer device transfer start information containing information indicating the storage position of the first data transfer information and information indicating the storage position of the second data transfer information, and the data transfer device reads out the second data transfer information from the second memory on the basis of the transfer start information, reads out the first data transfer from the third memory on the basis of the transfer start information, and

controls the data transfer between the first memory and the second memory on the basis of the first data transfer information and the second data transfer information.

12. The control method according to any one of claims 8 to 11, wherein the data transfer device writes into the third memory information indicating the result of the data transfer carried out between the first memory and the second memory.

13. A control method for a storage device controlling device comprising: a channel controller for receiving a data writing request based on a file-name indication and writing data from an information processing device through a network; a disk controller for writing the writing data into a storage volume in which data are stored; and a first memory for storing the writing data transmitted/received between the channel controller and the disk controller, the channel controller being equipped with a first processor for outputting a block-basis write request corresponding to the data writing request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to receive the data writing request and the writing data from the information processing device, a data transfer device for controlling the data transfer between the first memory and the second memory, and a third memory controlled by the first processor, which are formed on a circuit board, characterized in that the first processor writes into

the third memory first data transfer information containing information indicating the storage position of the writing data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the writing data in the second memory and transmits information indicating the storage position of the second data transfer information to the first processor, the first processor transmits the data transfer device transfer start information containing information indicating the storage position of the first data transfer information and information indicating the storage position of the second data transfer information, the data transfer device reads out the second data transfer information from the second memory on the basis of the transfer start information, reads out the first data transfer information from the third memory on the basis of the transfer start information and transfers the writing data from the second memory to the first memory on the basis of the first data transfer information and the second data transfer information, and the disk controller writes into the storage volume the writing data stored in the first memory on the basis of the write request.

14. A control method for a storage device controlling device comprising: a channel controller for receiving a data read-out request based on a file-name indication from an information processing device through a network and



transmitting to the information processing device read-out data read out from a storage volume for storing data; a disk controller for reading out the read-out data from the storage volume; and a first memory for storing the read-out data transmitted/received between the channel controller and the disk controller, the channel controller being equipped with a first processor for outputting a block-basis read request corresponding to the data read-out request and controlling the first memory, a file access processor which has a second processor and a second memory for controlling the second processor and receives the data read-out request from the information processing device, a data transfer device for controlling the data transfer between the first memory and the second memory, and a third memory controlled by the first memory, which are formed on a circuit board, characterized in that the disk controller writes into the first memory the read-out data read out from the storage volume on the basis of the read request, the first processor writes into the third memory first data transfer information containing information indicating the storage position of the read-out data in the first memory, the second processor writes into the second memory second data transfer information containing information indicating the storage position of the read-out data in the second memory and transmits information indicating the storage position of the second data transfer information to the first processor, the

first processor transmits to the data transfer device transfer start information containing information indicating the storage position of the first data transfer information and information indicating the storage position of the second data transfer information, the data transfer device reads out the second data transfer information from the second memory on the basis of the transfer start information, reads out the first data transfer information from the third memory on the basis of the transfer start information and transfers the read-out data from the first memory to the second memory on the basis of the first data transfer information and the second data transfer information, and the second processor transmits the read-out data stored in the second memory to the information processing device.